

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Calculus: Review for Q2 Exam 3

This review sheet is not comprehensive. Be sure to study your old tests, notes, and homework as well! There will be one question on this test just like one of the questions on your previous exam.

For questions #1-4, identify:

- Intervals  $f(x)$  is increasing
- Intervals  $f(x)$  is decreasing
- Intervals  $f(x)$  is concave up
- Intervals  $f(x)$  is concave down
- The coordinates of all points of inflection

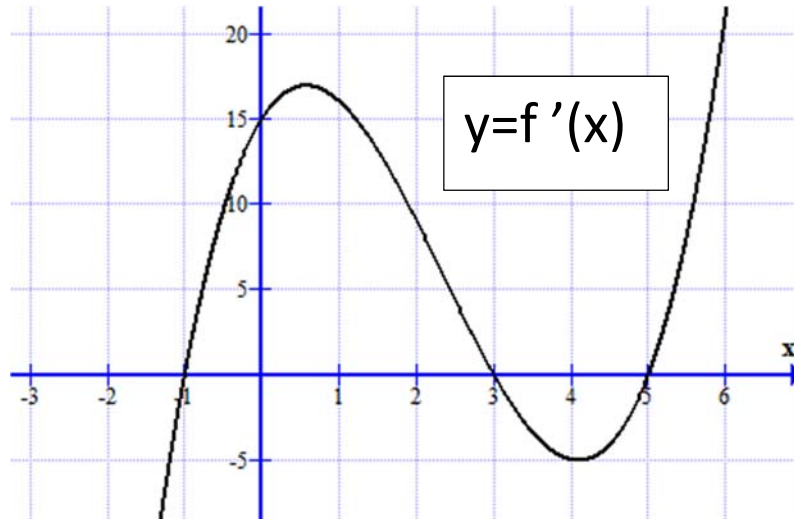
1.  $f(x) = 4x^3 - x^4$

3.  $f(x) = (2x - 5)^3$

2.  $f(x) = \frac{2x}{x-2}$

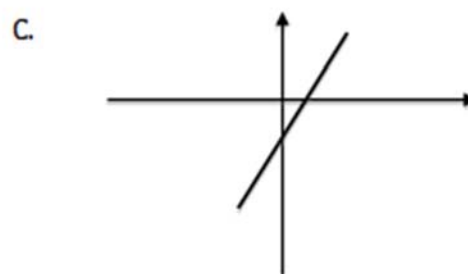
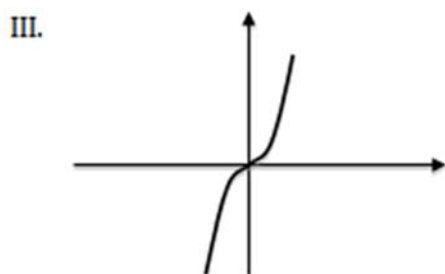
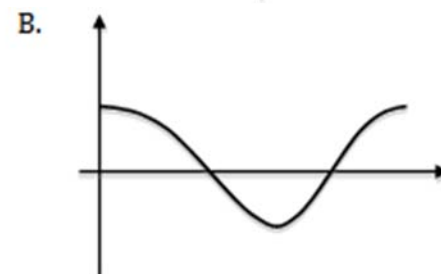
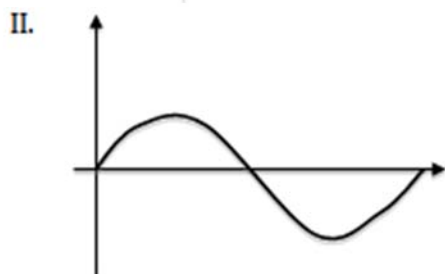
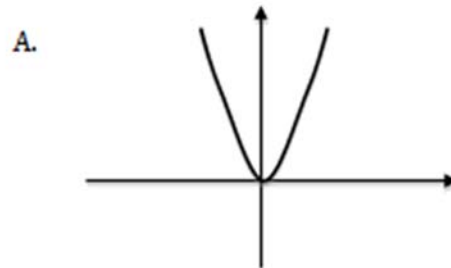
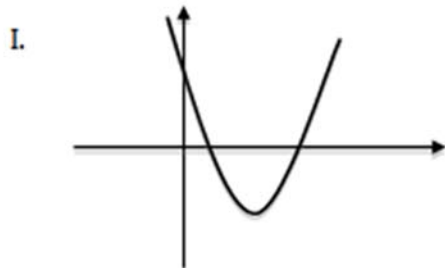
4.  $f(x) = \frac{x^2}{x^2 - 4}$

The graph below is the graph of  $f'(x)$ . Note that the graph of  $f(x)$  is not shown. If the function  $f(x)$  is defined for all  $x$ , use this graph to answer questions #5-6.



- On what interval(s) is the function  $f(x)$  increasing?
- On what interval(s) is the function  $f(x)$  decreasing?

7. Match the Functions (I, II, III) with their derivatives (A, B, C)



8. For each of the following, find all points of absolute minima and maxima on the given closed interval

a.  $f(x) = 2x^3 - 9x^2 + 12x - 5; [0, 2]$

b.  $f(x) = 2x^3 - 15x^2 + 24x + 2; [0, 2]$

9. Using the accompanying graph of  $f(x)$ , fill in  $=$ ,  $<$ , or  $>$

a.  $f'(-2)$      0

b.  $f'(-1)$      0

c.  $f'(0)$      0

d.  $f(1.5)$      0

e.  $f'(-3)$       $f'(-1)$

f.  $f(1)$       $f'(1)$

g.  $f''(1)$       $f'(1)$

h.  $f'(1)$       $f'(0)$

